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AUTHOR Abbott, Carl; Abbott, Cooper
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ABSTRACT

This paper discusses the impact of layout and design of child care centers on the education of young children. It asserts that child care facilities must be designed to support and stimulate children's natural developmental processes, providing both direct and indirect educational opportunities. The paper discusses the stages of the design process and the role of architectural firms in designing child care facilities. An overview is provided of the following topics: the importance of the built environment to the young child; the approach to design; a summary of the design process; the role of codes and regulations; and master planning and budgeting the project. Also discussed are different issues that need to be considered in the design process, such as: (1) designing for different age groups; (2) flexible classroom space; (3) outside play space; (4) landscaping; (5) color and light; (6) furniture and finishes; (7) kitchens; and (8) safety and security. (MDM)

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Child Care Center Design & The Potential of Architecture

A great deal has been contributed to the literature of Child Care in terms of approaches and methodologies to teaching, but very little has been done to fully consider the impact of the physical environment in which such education takes place. Lessons from Architecture and Environmental Psychology teach us that the physical surroundings can have profound impacts on the young child and on the quality of the educational process. As the cultural phenomenon of Child Care continues its rapid growth---and with more and more facilities being built---there is a need to focus attention on the extremely important and often overlooked element of Architectural design of these educational spaces. Such attention to this area can unlock the hidden potential of the built environment as a supportive and enhancing element in the education of young children.

THE IMPORTANCE OF THE BUILT ENVIRONMENT TO THE YOUNG CHILD

Early childhood is a time of intense social, intellectual, and psychological development. It is in the first few years of life that fundamental patterning and environmental awareness takes place; at this age infants and toddlers are exploring and recording a vast range of experiences about the world around them that will shape their responses well into their adult lives. A great deal of this early learning is environmental: without spoken language, visual and physical experiences form the preponderance of the child's interface with the world. Towards the ages of 2, 3, & 4 environmental exploration becomes increasingly active, with greater spatial awareness and tactile investigation (climbing, running, throwing, playing, and other boisterous activities) supported by the child's surplus energy and curiosity.

The environmental nature of childhood development gives the built environment in which child care education takes place a profound impact on the success and quality of the development experience. Child care facilities must be designed to support and stimulate the child's natural developmental processes, providing both direct and indirect educational opportunities.

APPROACH TO DESIGN

Child care facilities have a unique function with unique needs, and their design should reflect this fact. Sensitive architectural attention can insure functional essentials: efficient organization of operational elements such as offices, kitchens, toilet facilities, staff lounges, individual class rooms, common meeting areas, and outside play spaces. The careful orientation of automobile circulation and of service access to the building; the proper sizing of spaces; and selecting appropriate operational systems for the needs of the individual center and the children who will use it are other important aspects.

Of course, for a child care center to be truly successful it must do more than just meet functional requirements; it must support, inspire, and stimulate the young children who use and learn there. It is these children who are the true "clients" of a child care center.

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A SUMMARY OF THE DESIGN PROCESS

Our firm's approach to educational design is to work closely with the care providers, staff members, institutional representatives, and with the children themselves. One way to begin this process is by evaluating any existing child care facilities, by visiting with the clients other facilities that they like or find interesting, and researching related center designs throughout the nation as well as internationally. We discuss the nature and philosophy of the child care to be provided by the individual group: what age groups will be housed, how will different age groups be arranged, future expansion, etc. This preliminary phase of the project in which the basic program of the facility is developed is known as Schematic Design.

Once a clear program is developed, the Design Development phase begins. It is at this point that the specifics of room size, adjacencies, and spatial arrangements are explored. Working from spatial relationships familiar to the client, existing room sizes and orientations are evaluated and critiqued. One example of the effectiveness of closely working with those who will actually provide child care services is found in establishing the appropriate room sizes. Determining proper square-footages can be an elusive process, especially for those not familiar with reading architectural drawings or relating the measurement to the "feel" of a space. Working from room sizes familiar to the client provides a frame of reference that allows size and function to quickly communicate.

Once the layout and orientation of the building is established, the next step is to translate the design into documents which reflect its physical construction and appearance. The design process continues to focus on increasingly specific elements, including materials, until the physical form of the facility is described in the working drawings ("blue prints") and specification manuals, in the phase known as Construction Documents.

At this stage, the services of a Contractor are needed. With the documents prepared, the project can either be bid or negotiated with a Contractor. More and more, the process of low-bidding is falling into disfavor, as it tends to establish an adversarial position between the Contractor on one side and the Architect and Owner on the other. In addition, the low bid process puts no premium on the quality of the Contractor's past performance; focusing instead on *minimum* acceptable requirements. Invited bids solicited from selected contractors of known quality and commitment, cost-plus-a-percentage contracts, and negotiated fees are approaches that are on the rise and represent the wave of the future as they address both the issue of cost and of quality. The ultimate solution will depend on the specific needs of the center or institution.

During the actual construction of the project, the Architect provides Construction Administration throughout the building process to ensure that the original design intent is carried out. The Architect will visit the site, process submittals for materials and systems from the contractor, and review pay requests as the construction progresses.

As the design process continues and becomes increasingly focused on individual elements, it is important to keep the Vision of the building clearly in mind. The complex nature of child care design, with its numerous special requirements and extensive regulatory mandates, can lead to such a tight focus that the overall impact and function of the facility is compromised in the efforts of meeting some particularly stringent requirement. Researching such requirements early in the project allows the design to carefully incorporate them. Keeping the big picture in mind at every

stage of the project's development will ensure a successful project that meets the original intent of the client.

CODES & REGULATIONS

Increasingly, regulatory codes have a significant impact on the design, cost, and construction of child care centers. The code approval process can be time consuming and, at times, seemingly arbitrary. It is not unusual to come across contradictions and unclear areas in the codes that will require discussion and negotiations with code officials; experience with Health & Rehabilitative Services (HRS), the Americans with Disabilities Act (ADA), various health care regulations, as well as environmental codes can help speed the process and make the impact of building codes work in favor of the design.

MASTER PLANNING & BUDGETING THE PROJECT

Master planning the child care facility is a significant element in a successful design. Whether a remodeling, retire-fit, or new construction, it is important to consider the immediate as well as the long term child care needs. Does the institution plan to expand in the future? If so, is to what size? Is a central facility desired or would satellite locations be better suited to the community's needs? Does the site offer adequate opportunity for expansion? Are surrounding utilities adequate? What sorts of circulation issues are involved, both within the site and from surrounding areas? What sort of impact will the child care center have on the community and its neighbors? These are important questions to work out early in the design process to assure that the Center is able to carry out its prime function while making a positive contribution to the community. Oftentimes child care centers require a change in zoning, a time consuming process that requires formal representation to municipal governing bodies. Proper forethought and consideration of future as well as present needs is a key first step in good design.

Budget is a major factor in any project. It is important to balance the needs of the initial cost with effective life cycle costs over the long run. For example, many mechanical systems which have a higher initial cost, have significantly lower total costs and environmental impact over their operational lifetimes. Consideration of such alternatives at the early stages will ensure that the specific budgetary realities of the project are met. Other options that are effective in meeting a limited budget are the use of simple finish materials and a design which allows for multiple uses of spaces and enhancements through future phasing.

Budgetary restraints are often used as a reason not to involve the services of a skilled architect, but such reasoning fails to consider the long term, life-cycle costs of construction and operating expenses, not to mention the success and integrity of the architectural space. A skilled and sensitive architect can offer solutions which are both cost effective and contribute to a quality space. Selection of building systems, project phasing, and materials are but a few of the many areas in which the experience of an architect can be of real cost saving value.

SOME ASPECTS OF CHILD CARE DESIGN

Designing for the child's point of view is a vital premise of good child care center design: the scale of the building, its orientation, the choice of materials, colors, room arrangements, and layout on the site should be developed from the perspective of the children who will inhabit and be the prime users of it. A sense of fun and exploration, combined with the functional needs, will be greatly appreciated by these most demanding of young "clients."

Designing for Different Age Groups

Different age groups have quite different physiological and psychological needs and the design should reflect this. Infants, children under one year of age, require constant supervision, smaller spaces, and provision for ample crib and play space. Toddlers need more space for their explorations and design which minimizes sharp edges and hard surfaces is desired. Children aged 2, 3, and 4 years need increasingly free and challenging space for their active investigation.

In one child care center our firm designed, the infants and toddlers were located in one wing while the 2 to 4 year-olds were arranged in another. This separation kept similar ages together and allowed for efficient interior design. Such a floor plan provided efficient circulation control---keeping different ages separated so that no four-year-olds go running through the sleeping infants cribs. Another advantage of the layout is noise control, a key concern as any child care provider well knows.

The ceilings in the infants room are lowered to provide a closeness and security; lighting was natural and bounced incandescent---no big fluorescent ceiling fixtures beaming down into the up looking infant's crib. The toddlers rooms are larger, more colorful, and had easy access to an exterior play yard. A bath room complete with miniature toilets provides both a functional and learning opportunity.

In this building, the 2's, 3's, and 4's have the largest rooms, with sloped ceilings following the exterior form of the pitched roof. Fun shaped windows provide a changing pattern of light and shade which changes across the course of the day and over the seasons. Elevated platforms in the older children's rooms offer increased square footage and create small kid-sized play and exploration spaces. A central open meeting space offers square footage to accommodate all children at the facility and flexible enough to serve as the cafeteria, interior play space, theater, and auditorium.

Flexible Classroom Space

Classroom space can also be designed to allow flexibility. The use of moveable partitions can subdivide rooms for smaller class sizes and allow use of the room's space by different age groups or by groups performing different activities. Likewise, a close relationship between the inside classroom and outside play spaces can create rooms which feel larger and which can operate as inside-out spaces as well. The use of large glass sliding-walls and ample operable windows provide not only natural light but the potential for cross-ventilation and air circulation as the seasons and weather allow.

Outside Play Space

Outside play spaces are an opportunity to provide much needed open areas in which the energy and exuberance of the children can be given full license. Everything from cedar mulch to rubberized play surfaces, from elaborate playground equipment to trees well suited for climbing can be used as elements in these spaces. Some form of shade control, especially at the lower latitudes and especially for the infants and toddlers, is advisable. Fun and colorful tent-like materials can be used as can solid overhangs and the attentive placement of trees.

One element that we have found from experience to be a valuable addition to an outside play area is an exterior bathroom; such an "outhouse" helps prevent to domino cycle of "*I have to go to the bathroom*" that seems to be a constant whenever a group of young children is brought outside to

play. The "outhouse" has the virtue of keeping the children all in the same area where they are under the observation of the child care providers, rather than having a provider continuously escort children inside the building, losing time and observation.

Landscaping

Landscaping can be another area to involve the creativity and curiosity of the children. As with other design decisions in child care, planting materials should be chosen with an eye to maintenance and safety (watch out for berries, thorns, flowers which attract dangerous insects), as should some form of fencing or walls. Selection of colorful and interesting smelling plants can not help but attract the attention of the youngsters, and can also provide a lesson in the changing seasons and Nature's annual cycles.

Color & Light

Color and light are key Architectural elements that can have major impacts in designing spaces for young children. Natural light is important not only for its health benefits and as a supplement to electrical illumination, but because it can provide an element of seasonal and daily change that keeps the child in touch with the surrounding natural environment. In the higher latitudes and on northern exposures, extensive use of glass can provide valuable supplementary sunlight; windows facing the south can offer highlights of sun and shade contrast and cast interesting and always changing patterns across the room. Color can have a stimulating and calming effect and can add to the visual interest of interior and exterior spaces. Walls, floors, ceilings, furniture and play equipment offer opportunities to excite and challenge the students, always keeping the overall integrity of the building and architectural space in mind.

Furniture & Finishes

Finish materials and furniture can have a major impact on the budget of a child care center; they can also help add an element of fun and excitement. Finishes are available in materials which offer a range of safety, maintenance, and color options and selection is highly dependent upon the individual care center and institution. In institutional settings, it is important to get the input of the maintenance crew so that equipment and procedures can be streamlined. Maintenance costs over the life cycle of the building can exceed the original cost of the finish and should be considered closely.

Kitchen

The inclusion of a kitchen in a child care center can be a costly initial investment that pays off over the life-cycle of the building. In one center we designed, a kitchen was included that was sized to provide food service for that building, for its future expansion, and for another separate child care center. The kitchen gave greater control over the nutritional content of the food served and made economic sense with the other location. If a kitchen is desired at a future point, a design can offer the flexibility for its inclusion. Because of cost factors associated with cooking systems, it is usually better to build a kitchen to its full size at one time rather than expand it incrementally. Food service access and location, including a dumpster, are important consequences of kitchens and must be related into the overall design.

Safety & Security

Safety and security are important elements in design and must be closely considered. In large part, these come down to good visual surveillance from within the classroom and assembly spaces of the building and to areas outside the facility. Access to the street should be controlled be a

properly placed check-in desk or administrative area to screen people from the outside and to keep children from wandering off unattended. Other technologies, such as video surveillance, hierarchical key/check-in systems, etc. can be included as individual cases require; their performance in other facilities should be closely investigated prior to selection.

FUTURE COMBINATIONS: CHILD CARE & ELDER CARE

The growing number of child care and early childhood education services reflect a growing cultural change. Just as there is a need for professional care and education of young children, there is also a growing need for the professional care of the elderly. Possible combinations of child and elder care---the old and the young learning and benefiting from each other---has great potential and is an area we are actively researching.

SUMMARY

The potential impact of architectural design on child care facilities is extremely significant, yet far too often overlooked. The vast majority of child care takes place in facilities that were not specifically designed for the unique and rigorous requirements of this demanding educational field. Great potential for enhancing the learning process is lost by not adequately considering the impact of the environment and its stimulating effect, whether remodeling or new construction. Good architectural design which takes into account the specific needs of the child care providing institution, the providers themselves, and most importantly the young children it houses can provide a cost effective, high quality space that will enhance the long life and important social function of child care facilities.

ABOUT THE AUTHORS

The Carl Abbott FAIA Architects / Planners firm has been involved in a wide range of educational projects and is widely recognized as innovators in design. The firm has experience in child care, elementary, middle school, high school, and university design and has been highly awarded for commitment to the client both by the public and within the profession.

CARL ABBOTT, Architect FAIA, is a Fellow of the American Institute of Architects and has been widely recognized by honors and awards for his dedication to architectural design and service to the profession. Carl has taught at a number of universities and is currently lecturing at Harvard University.

COOPER ABBOTT is an Environmental Planner with a focus on environmental psychology and sustainable design.

The authors would be pleased to discuss design and design related issues of educational facilities with you further. Please contact us:

Carl Abbott FAIA • Architects / Planners PA
2846 Riverside Drive
Sarasota, Florida 34234
Telephone: (941) 351-5016